

US-PAT-NO: 6265102

DOCUMENT-IDENTIFIER: US 6265102 B1

TITLE: Prismatic metal-air cells

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The casings and metal-air electrochemical cells of the present invention are especially suitable for use in battery packs for powering cellular telephones. In typical state-of-the-art duty profiles on discharge in analog mode, the pack must provide for about 500-mA continuous current, depending on location. An alternative digital mode cellular system (GSM) used by Motorola requires a repeating cycle of about 78 mA for 4 milliseconds followed by a pulse of 1,340 mA for 0.5 milliseconds. The digital mode profile used by Ericsson is different from that used by Motorola, requiring a repeating cycle of about 150 mA for 4 milliseconds followed by a pulse of 2,000 mA for 0.5 milliseconds.

US-PAT-NO: 5916699

DOCUMENT-IDENTIFIER: US 5916699 A

TITLE: Hybrid energy storage system

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In the communications field power spike problems have become acute since the advent of digital communications, in which some communication applications require power pulses on the order of 5 amperes, for relatively long durations, i.e., up to 20 milliseconds, and with a 10 Hz frequency. Other communications systems such as GSM (Global System for Mobile Communication) have relatively narrow pulses and lower currents, but applied with higher frequency, on the order of 200 Hz. For example, the duty cycle for the GSM phone is approximately 4.6 milliseconds (mSec) long. During the duty cycle, there is a peak burst current of approximately 1.42 amps at 6 volts which is required for approximately 0.56 (mSec). During the balance of the duty cycle, the average current drawn is approximately 0.22 amps. This is required for 4.04 mSec. The frequency of the entire duty cycle is in excess of 200 Hz, specifically 217 Hz. Thus, there exists a need for circuitry in an energy storage device including both a battery and a capacitor, which senses changes in the impedance of the battery, due either to age or varying temperature, and which changes the trigger point for the capacitor.

US-PAT-NO: 6284400

DOCUMENT-IDENTIFIER: US 6284400 B1

TITLE: Metal-air cathode can, and electrochemical cell made therewith

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An affect of the above described restrained peening process is that the air port resulting from especially the second, restrained peening, step of such process usually has a non-circular cross-section whereby the area of the opening defined by the air port is more appropriately defined in terms of the area of a corresponding or effective diameter.

US-PAT-NO: 6040074

DOCUMENT-IDENTIFIER: US 6040074 A

TITLE: Metal-air cathode can, and electrochemical cell made therewith

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